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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,624	11/01/2001	Crystal M. Cunanan	ECV-5630	1582

7590 06/01/2004

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EXAMINER

WINKLER, ULRIKE

ART UNIT	PAPER NUMBER
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1648

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/004,624

Applicant(s)

CUNANAN ET AL.

Examiner

Ulrike Winkler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25,28,50-52,55,56,59, 61 and 62 is/are pending in the application.
- 4a) Of the above claim(s) 1-25,28,61 and 62 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 50-52,55,56 and 59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The Amendment filed February 26, 2004 in response to the Office Action of August, 26, 2004 is acknowledged and has been entered. Claims 26-27, 29-49, 53, 54, 57, 60 have been cancelled. Claims 50-59 are pending and are currently being examined; these claims are drawn to the elected invention of Group VIII. Claims 1-25, 28, 61 and 62 are drawn to a non elected invention which comprises the joined Groups I and II of the original Election/Restriction requirement as well as newly added claims.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

To clarify the prosecution history so far an Election/Restriction requirement was made in the Office Action of February 4, 2003, to which applicants filed a response on June 6, 2003. In the response Applicants elected the inventions of Group VIII (claims 50-60) which is drawn to a method of removing the calcium nucleation sites from a biological material. Applicant's response additionally included a traversal of the restriction between Groups I and II and between groups VI and VII. The grounds of traversal never addressed how Groups I, II and VIII have a common inventive concept. The rejoined groups I and II are drawn to the removal of the binding sites of proteins while Group VIII is drawn to the removal of calcium nucleation binding sites. There is no indication that the calcium nucleation binding sites and the protein binding sites are the same (common inventive unit). A protein binding site may be another membrane protein, which is a different structure from a phospholipid. The Examiner indicated that the restriction between Groups I and II would be withdrawn. The Examiner inadvertently indicated that claims

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1-15 and 28 were under consideration in the first paragraph of the last office action. This was not substantiated by the Office Action summary or the entire Office action, which only addressed claims 50-60. It appears Applicants is under the impression the claims of group I, II and VIII have been rejoined, which in not the case. The examiner apologizes for any inconvenience this may have caused Applicant's, however, claims 1-25 and 28 have not been examined.

Newly submitted claims 61 and 62 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The claimed methods are drawn to a process that determines the effectiveness of cleansing procedure, classified in class 435, subclass 31.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 61 and 62 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Information Disclosure Statement

An initialed and dated copy of Applicant's IDS form 1449, July 30, 2003, is attached to the instant Office action.

Claim Rejections - 35 USC § 112

The rejection of claim 50-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention **is withdrawn** in view of Applicants arguments. Applicants point to the definition in the specification on page 9, line 19-21 which indicates that a calcium nucleation site may include phospholipid, protein and/or polysaccharide.

The rejection of claims 50-60 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention **is withdrawn** in view of Applicant's amendment to the claims

Claim Rejections - 35 USC § 102

The rejection of claims 50-52, 55, 56, 58 under 35 U.S.C. 102(a) or (e) as being anticipated by Lee et al. (U.S. Pat. No. 6,008,292) **is maintained** for reasons of record.

Applicant's arguments have been fully considered but fail to persuade. Applicants argument are that the amendment to the claims which uses the transitional phrase "consisting essentially of" indicates that nothing other than surfactant and a denaturation agent is part of the claimed invention and therefore specifically excludes a crosslinking agent.

MPEP 2111.03 provides: For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See, e.g., *PPG*, 156 F.3d at 1355, 48 USPQ2d at 1355 ("PPG could have defined the scope of the phrase consisting essentially of for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention.").

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A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process “eliminating or reducing calcification in a biological sample” or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Lee et al. discloses a method of preparing collagenous biological material to inhibit calcification by treating the tissue with Denacol and 20% ethanol as well as treating tissue with a mixture of glutaraldehyde, ethanol and Tween-80 (see example 1). The tissue is then treated with polyglycidyl ether either in conjunction or following the glutaraldehyde treatment (see example 1). Ethanol and Tween are agents known to be capable of solubilizing phospholipids. Therefore, the instant invention is anticipated by Lee et al.

The rejection of claims 50-52, 55, 56, 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Nashef (U.S. Pat. No. 4,729,139) **is maintained** for reasons of record.

Applicant’s arguments have been fully considered but fail to persuade. Applicants argument are that the amendment to the claims which uses the transitional phrase “consisting essentially of” indicates that nothing other than surfactant and a denaturation agent is part of the claimed invention and therefore specifically excludes a crosslinking agent.

MPEP 2111.03 provides: For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, “consisting essentially of” will be construed as equivalent

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to “comprising.” See, e.g., *PPG*, 156 F.3d at 1355, 48 USPQ2d at 1355 (“PPG could have defined the scope of the phrase consisting essentially of” for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention.”).

Nashef discloses utilizing a disinfecting solution for the processing of bioprosthetic tissue comprising formaldehyde, ethanol and tween-80 (see example 1). Ethanol and Tween are agents known to be capable of solubilizing phospholipids. Formaldehyde is a well-known sterilization/disinfecting agent. Therefore, the instant invention is anticipated by Nashef.

The rejection of claims 50-52 and 58 under 35 U.S.C. 102(b) as being anticipated by Vyavahare et al. (Circulation, 1997) **is withdrawn** because applicants amendment requires minimally a surfactant and denaturant.

The rejection of claims 50-52, 55, 56, 58 are rejected under 35 U.S.C. 102(e) as being anticipated Cunanan et al. (U.S. Pat. No. 6,214,054) as evidenced by Vyavahare et al. (Circulation, 1997) **is maintained** for reasons of record.

Applicant’s arguments have been fully considered but fail to persuade. Applicants argument are that the amendment to the claims which uses the transitional phrase “consisting essentially of” indicates that nothing other than surfactant and a denaturation agent is part of the claimed invention and therefore specifically excludes a crosslinking agent.

MPEP 2111.03 provides: For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic

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and novel characteristics actually are, “consisting essentially of” will be construed as equivalent to “comprising.” See, e.g., *PPG*, 156 F.3d at 1355, 48 USPQ2d at 1355 (“PPG could have defined the scope of the phrase consisting essentially of” for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention.”).

Cunanan et al. disclose a method of preparing bioprosthetic tissue (see claims) using a combination formaldehyde, ethanol and Tween (see claim 16) for the processing of the tissue. Vyavahare et al. show that ethanol treatment is effective at removing phospholipids (see table 1). Therefore, the instant invention is anticipated by Cunanan et al.

Claim Rejections - 35 USC § 103

The rejection of claims 50-60 under 35 U.S.C. 103(a) as being unpatentable over Nashef (U.S. Pat. No. 4,729,139) in view of Mirsch et al. (U.S. Pat. No. 6,121,041) is **maintained** for reasons of record.

Applicant’s arguments have been fully considered but fail to persuade. Applicants argument are that the amendment to the claims which uses the transitional phrase “consisting essentially of” indicates that nothing other than surfactant and a denaturation agent is part of the claimed in invention and therefore specifically excludes a crosslinking agent. Applicant’s argue that Mirsh et al. does not specifically mention phospholipase. This is not found persuasive as first of all bacteria do produce phospholipase, furthermore, the Mirsh et al. reference (see claim 2) indicates that the microorganism can additionally contain an exogenous enzyme effective for

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decellularising. Phospholipase is one of the enzymes that can be added to the microorganism used for decellularization (see Mirsh et al. column 7, lines 27-36).

MPEP 2111.03 provides: For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See, e.g., *PPG*, 156 F.3d at 1355, 48 USPQ2d at 1355 ("PPG could have defined the scope of the phrase consisting essentially of" for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention.").

Nashef teaches utilizing a disinfecting solution for the processing of bioprosthetic tissue comprising formaldehyde, ethanol and tween-80 (see example 1). Ethanol and Tween are agents known to be capable of solubilizing phospholipids. Formaldehyde is a well-known sterilization/disinfecting agent. The processing taught Nashef achieves reduced calcification of the bioprosthetic tissue. The reference does not teach adding a phospholipase.

Mirsch et al. teach a method of decellularizing tissue using microorganisms. Calcification appears to be the primary process leading to degradation of bioprosthetic tissue (column 1, lines 60-61). Non-viable cells present in transplanted tissue are sites for calcium deposition (column 2, lines 7-11). Microorganism are known to produce various enzymes including nucleases, proteases and phospholipases. Lysed cells can provide a source of enzymes and other material effective for decellularization (column 8, lines 5-10). The microorganisms can be removed by soaking, rinsing or filtration. The reference does not teach using a formaldehyde, ethanol and Tween-80 solution to render the tissue suitable as a bioprosthetic.

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It would have been obvious to one of ordinary skill in the art to utilize the enzymes produced by microorganism (Mirsch et al.) and combine them with the cleansing process (Nashef). One having ordinary skill in the art would have a high expectation for success in combining the two methods each of which reduces the potential for calcification of the bioprosthetic material. Therefore, the instant invention is obvious over Nashef (U.S. Pat. No. 4,729,139) in view of Mirsch et al. (U.S. Pat. No. 6,121,041).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 50-58 and 60 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-27 of U.S. Patent No. 6,214,054 in view of Vyavahare et al. (Circulation, 1997). Although the conflicting claims are not identical, they are not patentably distinct from each other because the method disclosed in U.S. Patent No. 6,214,054 will result in the removal of phospholipid from the fixed bioprosthetic tissue, as evidenced by Vyavahare et al. in which the phospholipid removal with ethanol treatment of

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glutaraldehyde fixed bioprosthetic tissue was evaluated (see Vyavahare et al., Circulation, Table 1).

Conclusion

No claims allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG (November 15, 1989). The Group 1600 Official Fax number is: (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center representative whose telephone number is (571)-272-1600.

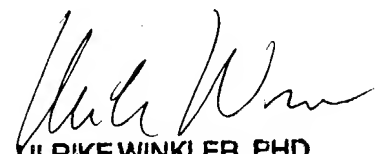
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ulrike Winkler, Ph.D. whose telephone number is 571-272-0912. The examiner can normally be reached M-F, 8:30 am - 5 pm. The examiner can also be reached via email [ulrike.winkler@uspto.gov].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel, can be reached at 571-272-0902.


ULRIKE WINKLER, PHD.
PATENT EXAMINER 5/28/04